

Appendix 21: Scoping Information Considered During Development of the Alternatives

Appendix 21

Scoping Information Considered During Development of the Alternatives

Information Presented	Consideration of the Information and Any Relationship to EPA Scoping Issues	
<p>1. Consider the voluntary actions of the tour industry, such as those based on IAATO's "Guidance for Those Organizing and Conducting Tourism and Non-Governmental Activities in the Antarctic," recommendation XVIII-1 adopted at the XVIII Antarctic Treaty Consultative Meeting (ATCM 1994), and IAATO's post-season reporting system to the National Science Foundation.</p>	<p>The Interim Final Rule does not specifically address the voluntary actions of tour operators including their use of Recommendation XVIII-1. In practice, most operators reference these documents and include adherence to the practices presented in them as mitigation measures to support their Initial Environmental Evaluations' conclusion that the impacts of the activities will be no more than minor or transitory.</p> <p><u>EPA Scoping Issue 5: Mitigation: what measures and for which activities</u></p>	<p>8.4(a)(7), 8.7, 8.8</p>
	<p>IAATO and other operators commented that their Post-Season Reports facilitate assessment of the potential impact of tourism activities in Antarctica. As discussed in Section 4.3.1 of this EIS, the monitoring provisions of the Interim Final Rule will be incorporated into alternatives, as appropriate, for the final rule.</p> <p><u>EPA Scoping Issue 3: Appropriate monitoring regime, if any</u></p>	<p>8.7, 8.8, 8.9</p>

Information Presented	Consideration of the Information and Any Relationship to EPA Scoping Issues	
<p>3. Consider the need to assure that the regulatory process is designed to identify impacts and mitigation alternatives in the planning stage for expeditions.</p>	<p>As discussed in Section 4.3.1, the mitigation provisions of the Interim Final Rule will be incorporated into the five alternatives for the final rule. If an operator chooses to mitigate and the mitigation measures are the basis for the level of environmental documentation, EPA assumes the operator will proceed with these mitigation measures. Otherwise, the documentation may not have met the requirements of Article 8 and Annex I and the provisions of the regulations.</p> <p><u>EPA Scoping Issue 5: Mitigation: what measures and for which activities</u></p>	<p>8.4(a)(7), 8.7, 8.8</p>

***Appendix 22: Significant Issues Identified
During Scoping: Commentors, Summary of
Comments, and Any Related Interim Final
Rule Requirements***

Appendix 22

Significant Issues Identified During Scoping: Commentors, Summary of Comments and Any Related Interim Final Rule Requirements

Category A: Issues related to the requirements to be applied to operators and EPA's role in the EIA process for nongovernmental operators

1. **Article 3 of the Protocol. Consider a substantive requirement that compliance with the provisions of Article 3 of the Protocol be demonstrated in EIA documentation (see Appendix 23).**

TAP/ASOC: Recommended the final rule require that environmental documentation submitted by a nongovernmental operator demonstrate that the activities associated with an expedition are in compliance with Article 3 of the Protocol. The EIA process should be a means to impose substantive environmental requirements as set out in Article 3.

IAATO and Individual Tour Operators: Article 3 is hortatory and does not impose specific obligations on Parties regarding actions in Antarctica. An unnecessary, burdensome, and prescriptive rule could have potentially serious adverse environmental consequences in Antarctica by driving experienced U.S.-based operators offshore, possibly to countries that are not Party to the Treaty, or out of business. This approach could also have the effect of dismantling the current voluntary industry approach to limiting impacts.

National Science Foundation: Article 3 is hortatory and does not impose specific obligations on Parties regarding actions in Antarctica. Article 8 and Annex 1 set out the Protocol's binding obligations on EIA, and these provisions are procedural in nature; that is, they do not impose environmental obligations beyond those established elsewhere in the Antarctic Treaty System. The Act explicitly limits EPA's authority to issue regulations consistent with Annex I to the Protocol, and Article 3 is not mentioned anywhere in the statute.¹

Interim Final Rule: The Interim Final Rule does not contain a substantive provision implementing Article 3 of the Protocol. For operators preparing an IEE or CEE,² Section 8.4(b) of the Interim Final Rule directs that the operator should consider, as applicable, whether and to what degree the proposed activity may affect various elements of the environment, elements similar to those in Article 3. The approach in the Interim Final Rule is analogous to NEPA. It ensures full disclosure of all potential environmental impacts and then leaves to the operator the decision whether to proceed with the action which may include plans to mitigate the action's potential environmental impacts.³

¹ The position of the U.S. government is that the principles as expressed in Article 3 are given effect through the rules as expressed in the Annexes.

² IEE means an Initial Environmental Evaluation, a study of the reasonably foreseeable potential effects of a proposed activity on the Antarctic environment prepared in accordance with 40 CFR §8.7. CEE means Comprehensive Environmental Evaluation, a study of the reasonably foreseeable potential effects of a proposed activity on the Antarctic environment, prepared in accordance with the provisions of this part and includes all comments received thereon. (See: 40 CFR §8.8.)

³ Consistent with the Annex I, the public and other Parties have an opportunity to comment on activities, as described in a CEE, for which the impacts may be more than minor or transitory.

2. Prevention of Activities. Consider preventing an activity from proceeding if anticipated impacts are determined to be unacceptable.

TAP/ASOC: Recommended the final rule provide authority for the U.S. government to prevent a proposed activity by a nongovernmental operator from proceeding if the government's review of the environmental documentation found that the environmental impacts would be unacceptable. As stated under Issue 1, Article 3 is substantive and obligates Parties to ensure that activities must be planned and conducted to limit adverse impacts; accordingly, activities should be modified, suspended or canceled if they result, or threaten to result, in impacts on the Antarctic environment.

IAATO: EPA does not have authority under the Act to promulgate a final rule with substantive provisions which could effectively require that certain environmental impacts be avoided.

Interim Final Rule: The Interim Final Rule does not include a provision for the U.S. government to prevent a proposed activity by a U.S.-based nongovernmental operator from proceeding if the government's review of the environmental documentation finds that the environmental impact(s) would be unacceptable. However, consistent with the Protocol, the Interim Final Rule requires an operator to prepare a level of EIA documentation that is consistent with the impacts of the proposed activities on the Antarctic environment or on dependent or associated ecosystems according to whether those activities are identified as having: (a) less than a minor or transitory impact; (b) a minor or transitory impact; or (c) more than a minor or transitory impact.

EPA may, in consultation with the National Science Foundation, find that an operator's IEE documentation does not meet the requirements of Article 8 and Annex I of the Protocol and the provisions of the regulations. The operator may then decide to prepare a CEE for the proposed activities before proceeding to Antarctica. Section 8.8 lists the specific requirements that must be addressed for CEE level documentation. Any CEE must be circulated to other Parties and the public, and the operator must address and include (or summarize) any comments received. Following the final response from the operator, EPA, with the concurrence of the National Science Foundation, may make a finding that the document submitted does not meet the requirements of Article 8 and Annex I of the Protocol and the requirements of the regulations. Under the enforcement provision at Section 8.11, it is unlawful for an operator to violate the provisions of the Interim Final Rule, and any operator who violates any of the provisions of the regulations is subject to enforcement, which may include civil and criminal enforcement proceedings, and civil and criminal penalties pursuant to the Antarctic Conservation Act. Thus, if the operator proceeds with the proposed activities in Antarctica with EIA documentation that does not meet Article 8 and Annex I and the provisions of the regulations, as determined by EPA with the concurrence of the National Science Foundation, the operator would be subject to enforcement action, including civil and criminal penalties under the Antarctic Conservation Act.

3. Requirement for Insurance and Bonding. If a substantive provisions cannot be included in the final rule, consider requiring insurance and bonding to ensure corrective actions are taken where the impacts of a nongovernmental action cause environmental harm.

TAP/ASOC: The final rule should include a requirement for insurance and bonding to be used for compensation or restoration if the environmental effects of a proposed action turned out to impose unacceptable impacts.

Interim Final Rule: The Interim Final Rule does not contain any provision related to insurance or bonding.

4. EPA Review and Determination on EIA Documentation. Consider whether EPA should continue to review EIA documentation to determine if it meets the

requirements of Article 8 and Annex I of the Protocol and the provisions of the rule, and whether the associated enforcement provision should be retained.

IAATO: EPA does not have authority under the Act to assess the adequacy of EIA documentation prepared by the operators; rather, EPA's basic role is limited to promulgating rules governing environmental assessment. It is questionable whether EPA has authority to require revisions if a document is found not to meet the requirements of the Protocol and the Interim Final Rule, and thus by extension, the final rule.

Interim Final Rule: The procedures in the Interim Final Rule are designed to ensure that U.S.-based nongovernmental operators identify and assess the potential impacts of their proposed activities, and that operators consider these impacts in deciding whether or how to proceed with proposed activities.⁴ Section 8.5(a) and other parts of the Interim Final Rule provide for review of EIA documentation by EPA, in consultation with other federal agencies, to determine whether the EIA meets the requirements of Article 8 and Annex I of the Protocol and the provisions of the Interim Final Rule. EPA may, with the concurrence of the National Science Foundation, make a finding that the documentation does not meet the requirements of Article 8 and Annex I of the Protocol and the provisions of the Interim Final Rule. Under the enforcement provisions of Section 8.11, if the operator proceeds with the expedition without fulfilling the requirements of the Interim Final Rule, the operator would be subject to enforcement action.

5. Elaboration of Factors to be Considered in the EIA. Consider whether EIA documentation should be required to address compliance with other applicable provisions of the Protocol and relevant U.S. statutes.

TAP/ASOC: The operators' EIAs must weigh the scientific or other benefits of an activity against the environmental impacts when deciding whether or not to proceed with the activity and must document any decision that the benefits of proceeding outweigh the environmental impacts. The EIA documentation must explain why the least impacting alternative is not the preferred alternative. The final rule must be explicit in detailing an operator's responsibility for ensuring that the vessel used to transport passengers to, from, or within Antarctica is able to comply with the Protocol's standards.

Public Commentor: Consider separate guidelines for different species of penguins, or separate guidelines for different landing sites.

IAATO: The final rule should not provide further elaboration beyond what is already in the Interim Final Rule as to factors which must be considered in the EIA.

National Science Foundation: The final rule should not provide further elaboration beyond what is already in the Interim Final Rule as to factors which must be considered in the EIA.

Interim Final Rule: The Interim Final Rule does not require that EIA documentation address compliance with other provisions of the Protocol. However, compliance with other obligations may be discussed in EIA documents, particularly if compliance with these obligations is relevant to mitigation of environmental impacts of the proposed expedition and the conclusion of the operator in the document (e.g., for an IEE, the potential impacts are no more than minor or transitory).

The Interim Final Rule provides direction as to what factors are to be considered for the different

⁴ 40 CFR §8.1(b).

levels of EIA documentation.⁵ Section 8.4(a) states the basic information requirements, and Section 8.4(b) directs that operators preparing an IEE or CEE should consider, as applicable, whether and to what degree the proposed activity may affect various elements of the environment, elements similar to those in Article 3. (See Issue 1: Article 3 of the Protocol.) Section 8.4(c) provides direction on the type of environmental document required relative to the nature and intensity of the environmental impacts that could result from the activity under consideration. For operators preparing an IEE⁶ or CEE,⁷ Sections 8.7 and 8.8 direct the content of the documents, respectively.

6. New Sites. Consider whether a CEE should be required for planned tourist expeditions to new sites.

TAP/ASOC: A mitigation measure that could be considered in a CEE would be a prohibition on visits to new sites by nongovernmental operators, namely tour operators.

Interim Final Rule: The Interim Final Rule does not distinguish between new or rarely visited sites and sites that have been previously visited. However, as stated above for Issue 4, Section 8.4(b) directs that operators preparing an IEE or CEE should consider, as applicable, whether and to what degree the proposed activity may affect various elements of the environment. Section 8.4(c) provides direction on the type of environmental document required relative to the nature and intensity of the environmental impacts that could result from the activity under consideration. Sections 8.7 and 8.8 direct the content of IEE and CEE documentation, respectively.

Category B: Issues concerning the scope of the application of the final rule and consideration of other Parties' requirements

1. Definition of Operator. Consider whether the definition of operator should include foreign operators “doing business in the United States” in order to cover foreign-based operators carrying U.S. citizens. If this is not feasible, consider applying the EIA requirements to all U.S. citizens going to Antarctica on nongovernmental expeditions.

TAP/ASOC: Since one third of all tourists to Antarctica are U.S. citizens, the final rule should be expanded to include all operators “doing business in the U.S.” or, if this is not feasible, the final rule should include other provisions to ensure that all U.S. citizens going to Antarctica are covered. The Congress, in Section 4(a)(6) of the Act, specifically directed that it is unlawful for “...any person who organizes, sponsors, operates or promotes a non-governmental expedition to Antarctica, and who does business in the United States...” to fail to take steps to ensure compliance with the Protocol.

⁵ The levels of documentation provided for in the Interim Final Rule include: Preliminary Environmental Review Memorandum (PERM) to assess whether the proposed activity may have less than a minor or transitory impact; Initial Environmental Evaluation (IEE) to assess whether a proposed activity may have no more than a minor or transitory impact; and Comprehensive Environmental Evaluation (CEE) for activities likely to have more than a minor or transitory impact.

⁶ IEE, an Initial Environmental Evaluation, means a study of the reasonably foreseeable potential effects of a proposed activity on the Antarctic environment prepared in accordance with 40 CFR §8.7.

⁷ CEE, a Comprehensive Environmental Evaluation, means a study of the reasonably foreseeable potential effects of a proposed activity on the Antarctic environment, prepared in accordance with the provisions of the Interim Final Rule and includes all comments received thereon. (See: 40 CFR §8.8.)

IAATO: The final rule should be limited to U.S. operators only; this approach is more consistent with provisions of the Act which requires EIA of nongovernmental activities, including tourism, for which the U.S. is required to give advance notice under paragraph 5 of Article VII of the Treaty.

Interim Final Rule: The Interim Final Rule defines operator or operators as “...any person or persons organizing a nongovernmental expedition to or within Antarctica,” and “[p]erson has the meaning given that term in section 1 of title 1, United States Code, and includes any person subject to the jurisdiction of the United States except that the term does not include any department, agency, or other instrumentality of the Federal Government.”⁸ The Interim Final Rule does not apply to individual U.S. citizens or groups of citizens planning to travel to Antarctica on an expedition for which they are not acting as an operator, nor does the Rule apply to U.S. citizens who participate in tours organized in or proceeding from countries other than the United States.⁹ The Interim Final Rule was issued pursuant to the Act and provides for the environmental impact assessment of nongovernmental activities, including tourism, for which the United States is required to give advance notice under paragraph 5 of Article VII of the Antarctic Treaty of 1959.¹⁰

2. Reciprocity Provision. Consider an automatic reciprocity provision for environmental documentation prepared for other Parties and submitted by a U.S.-based operator.

TAP/ASOC: Supports minimizing the paperwork burden on operators but believes it would be risky to automatically assume that satisfactory completion of an EIA for another Party would meet the requirements of the final rule. The final rule could allow incorporation of these documents by reference in the submittal to the U.S. Many Parties have procedures which allow the Party to require modification, suspension, or cancellation of an activity (including, for some Parties, a requirement to have a permit), and that completion of the EIA for these countries does not necessarily imply acceptance of that activity. For this reason, completion of the EIA documents for these countries should not automatically be presumed to meet the U.S. EIA documentation requirements.

IAATO and Some Individual Operators: The final rule should allow for U.S. approval without independent review where another Party to the Treaty has approved an EIA for a proposed expedition by a U.S.-based operator. Other Parties allow reciprocity and that failure to include this provision in the final rule could have serious environmental consequences if U.S. operators are put at a competitive disadvantage and U.S.-based operators are thereby encouraged to move their operations offshore, possibly to non-Party countries. The industry is complex and international in nature as are the variety of requirements that an operator might have to meet in dealing with two or more Parties.

National Science Foundation: Supports the concept of allowing for incorporation by reference EIAs prepared by nongovernmental operators for other Parties, or of some certification procedure of the other Party's EIA review process by EPA that would avoid the preparation of duplicate assessments.

Interim Final Rule: The Interim Final Rule does not specify the format for EIA documentation and allows considerable flexibility including a provision to incorporate material into an environmental document by referring to it. This provision allows operators to submit EIAs to EPA which may have been prepared to meet the requirements of other Parties to the Treaty. However, independent U.S. federal government review of the EIA document is still required.

⁸ 40 CFR §8.3, Definitions.

⁹ 40 CFR Part 8, Preamble, II.D.1.

¹⁰ 40 CFR §8.1(a).

Category C: Process-Oriented Issues

1. Multi-Year Environmental Impact Assessments (EIA)s. Consider including a provision for multi-year EIAs.¹¹

TAP/ASOC: Does not oppose multi-year EIAs but urged that such EIAs should be reviewed annually by the operators, and EPA, with the document modified to address any change in the activities or if the activity intensity significantly increases or decreases.

IAATO and Some Individual Operators: Recommends adding a provision to the final rule to allow operators to submit multi-year EIA documentation for activities repeated over two or more seasons thereby eliminating the need for annual submission of EIA documentation for these expeditions. Only the annual information needed for U.S. notification to other Parties would be submitted (e.g., the annual Advanced Notice submitted to the Department of State).

National Science Foundation: Supports adding a provision for EIA documentation which would cover multiple seasons.

Interim Final Rule: The Interim Final Rule requires annual submission of environmental documentation. However, previous EIA documentation can be incorporated by referring to it when the effect will be to reduce paperwork without impeding the review of the environmental document by EPA and other federal agencies. The incorporated material must be cited and its content briefly described. No material may be incorporated by referring to it in the document unless it is reasonably available to EPA.¹² This allows operators who plan no changes in activities to submit EIA documentation consisting of a letter incorporating the previous year's environmental documentation by referring to it and a copy of the advance notice provided to the State Department for the upcoming season.

2. PERMs. Consider eliminating the PERM¹³ provision of the Interim Final Rule.¹⁴

IAATO: Recommends that the preliminary environmental review provision in the Interim Final Rule be eliminated since, in their view, a PERM duplicates the information sent to the Department of State for purposes of Advance Notification of expeditions to Antarctica.

Interim Final Rule: Section 8.6 of the Interim Final Rule provides that unless the operator has determined to prepare an IEE or CEE, the operator must conduct a preliminary environmental review in sufficient detail to assess whether the proposed activity may have less than a minor or transitory impact on the Antarctic environment. This provision is consistent with Annex I to the Protocol. EPA's review, in consultation with other interested federal agencies, may result in a finding, with the concurrence of the National Science Foundation, that the environmental documentation submitted does not meet the requirements of Article 8 and Annex I of the Protocol. A PERM must include the basic information

¹¹ This falls under EPA Scoping Issue 4: *Options for streamlining documentation requirements* as listed in Section 4.3.

¹² 40 CFR §8.4(d).

¹³ A Preliminary Environmental Review Memorandum (PERM) means the documentation supporting the conclusion of the preliminary environmental review that the impact of a proposed activity will be less than minor or transitory on the Antarctic environment.

¹⁴ This falls under EPA Scoping Issue 4: *Options for streamlining documentation requirements* as listed in Section 4.3.

requirements listed in Section 8.4. This information is similar to the information sent to the Department of State for purposes of Advance Notification of expeditions to Antarctica.

3. Categorical Exclusions. Consider including a provision for categorical exclusions and categorically exclude Antarctic ship-based tourism conducted according to the “Lindblad Model.”¹⁵

IAATO: Endorsed a provision for categorical exclusions and recommended a categorical exclusion for Antarctic tourism activities organized under a carefully defined “Lindblad Model,” but did not provide definition for this model.

National Science Foundation: Noted that its NEPA regulations set out categorical exclusions for certain types of governmental activities in Antarctica.

4. Public Comment on IEEs. Consider requiring a formal public review process for IEEs similar to that provided for CEEs.¹⁶

TAP/ASOC: The final rule should provide for a formal public comment period for IEEs with a minimum of 30 days to provide comments.

IAATO: The existing approach is sufficient and should not be modified; the Protocol does not require public comment on IEEs.

National Science Foundation: The existing approach is sufficient and the Protocol does not require public comment on IEEs. Further, NEPA does not require public notice or comment on Environmental Assessments.¹⁷

Interim Final Rule: The Interim Final Rule provides for a 90 day public review of CEEs as required by Annex I to the Protocol. Neither the Protocol or the Act provide for public reviews of IEEs. Consistent with Annex I to the Protocol, the Interim Final Rule does not provide for a comment period for public review of IEEs. However, upon receipt of an IEE, EPA electronically publishes notice of its receipt on the Office of Federal Activities’ website¹⁸ and makes copies of the documents available to the public upon request.¹⁹ EPA also accepts comments from the public during its review of an IEE. In addition, the Department of State circulates to the Parties and makes publically available a copy of an annual list of IEEs prepared by U.S. operators in accordance with Article 2 and any decisions taken in consequence thereof.²⁰

¹⁵ This issue is EPA Scoping Issue 7: *Possible “categorical exclusions”* as listed in Section 4.3.

¹⁶ This issue is EPA Scoping Issue 8: *Public comment on IEEs* as listed in Section 4.3.

¹⁷ Under the practices of the U.S. Antarctic Program which is managed by the National Science Foundation, EAs under NEPA are also considered IEEs for purposes of meeting the obligations of the Protocol.

¹⁸ www.epa.gov/oeca/ofa

¹⁹ 40 CFR Part 8, Preamble, II.D.3(b). Further, TAP/ASOC has a standing request with EPA that it be provide a copy of any IEE, or other EIA documentation, submitted by a U.S.-based operator.

²⁰ 40 CFR §8.12.

5. **Threshold for “More Than Minor or Transitory Impact”.** Consider including a definition, or other provision, that would establish a threshold for “more than a minor or transitory impact.”

National Science Foundation: Recommended that the threshold for “more than a minor or transitory impact” and “significant effect” for purposes of the National Environmental Policy Act be explicitly equated in the final rule.

Interim Final Rule: The Preamble to the Interim Final Rule indicates that a determination as to whether an activity in Antarctica may have an impact that is more than minor or transitory is equivalent to a finding that the activity will have a “significant effect” for purposes of NEPA.²¹

²¹ 40 CFR Part 8, Preamble, Section II.D.4.

*Appendix 23: Protocol on Environmental
Protection to the Antarctic Treaty: Article
3, Article 8 and Annex I*

Appendix 23
Protocol on Environmental Protection to the Antarctic Treaty:
Article 3, Article 8 and Annex I

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Annex I: Environmental Impact Assessment

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Appendix 23
Protocol on Environmental Protection to the Antarctic Treaty

ARTICLE 3
ENVIRONMENTAL PRINCIPLES

1. The protection of the Antarctic environment and dependent and associated ecosystems and the intrinsic value of Antarctica, including its wilderness and aesthetic values and its value as an area for the conduct of scientific research, in particular research essential to understanding the global environment, shall be fundamental considerations in the planning and conduct of all activities in the Antarctic Treaty area.
2. To this end:
 - (a) activities in the Antarctic Treaty area shall be planned and conducted so as to limit adverse impacts on the Antarctic environment and dependent and associated ecosystems;
 - (b) activities in the Antarctic Treaty area shall be planned and conducted so as to avoid:
 - (i) adverse effects on climate or weather patterns;
 - (ii) significant adverse effects on air or water quality;
 - (iii) significant changes in the atmospheric, terrestrial (including aquatic), glacial or marine environments;
 - (iv) detrimental changes in the distribution, abundance or productivity of species or populations of species of fauna and flora;
 - (v) further jeopardy to endangered or threatened species or populations of such species; or
 - (vi) degradation of, or substantial risk to, areas of biological, scientific, historic, aesthetic or wilderness significance;
 - (c) activities in the Antarctic Treaty area shall be planned and conducted on the basis of information sufficient to allow prior assessments of, and informed judgments about, their possible impacts on the Antarctic environment and dependent and associated ecosystems and on the value of Antarctica for the conduct of scientific research; such judgements shall take full account of:
 - (i) the scope of the activity, including its area, duration and intensity;
 - (ii) the cumulative impacts of the activity, both by itself and in combination with other activities in the Antarctic Treaty area;
 - (iii) whether the activities will detrimentally affect any other activity in the Antarctic Treaty area;
 - (iv) whether technology and procedures are available to provide for environmentally safe operations;
 - (v) whether there exists the capacity to monitor key environmental parameters and ecosystem components so as to identify and provide early warning of any adverse effects of the activity and to provide for such modification of operating procedures as may be necessary in the light of the results of monitoring or increased knowledge of the Antarctic environment and dependent and associated ecosystems; and
 - (vi) whether there exists the capacity to respond promptly and effectively to accidents particularly those with potential environmental effects;
 - (d) regular and effective monitoring shall take place to allow assessment of the impacts of ongoing activities, including the verification of predicted impacts;
 - (e) regular and effective monitoring shall take place to facilitate early detection of the possible unforeseen effects of activities carried on both within and outside the Antarctic Treaty area on the Antarctic environment and dependent and associated ecosystems.

4. Activities shall be planned and conducted in the Antarctic Treaty area so as to accord priority to scientific research and to preserve the value of Antarctica as an area for the conduct of such research, including research essential to understanding the global environment.
5. Activities undertaken in the Antarctic Treaty area pursuant to scientific research programmes, tourism and all other governmental and non-governmental activities in the Antarctic Treaty area for which advance notice is required in accordance with Article VII (5) of the Antarctic Treaty, including associated logistic support activities, shall:
 - (a) take place in a manner consistent with the principles in this Article; and
 - (b) be modified, suspended or canceled if they result in or threaten to result in impacts upon the Antarctic environment or dependent or associated ecosystems inconsistent with those principles.

ARTICLE 8

ENVIRONMENTAL IMPACT ASSESSMENT

1. Proposed activities referred to in paragraph 2 below shall be subject to the procedures set out in Annex I for prior assessment of the impacts of those activities on the Antarctic environment or on dependent or associated ecosystems according to whether those activities are identified as having:
 - (a) less than a minor or transitory impact;
 - (b) a minor or transitory impact; or
 - (c) more than a minor or transitory impact.
2. Each Party shall ensure that the assessment procedures set out in Annex I are applied in the planning processes leading to decisions about any activities undertaken in the Antarctic Treaty area pursuant to scientific research programmes, tourism and all other governmental and non-governmental activities in the Antarctic Treaty area for which advance notice is required under Article VII (5) of the Antarctic Treaty, including associated logistic support activities.
3. The assessment procedures set out in Annex I shall apply to any change in an activity whether the change arises from an increase or decrease in the intensity of an existing activity, from the addition of an activity, the decommissioning of a facility, or otherwise.
4. Where activities are planned jointly by more than one Party, the Parties involved shall nominate one of their number to coordinate the implementation of the environmental impact assessment procedures set out in Annex I.

Annex I to the Protocol on Environmental Protection to the Antarctic Treaty

Environmental Impact Assessment

ARTICLE 1 PRELIMINARY STAGE

1. The environmental impacts of proposed activities referred to in Article 8 of the Protocol shall, before their commencement, be considered in accordance with appropriate national procedures.
2. If an activity is determined as having less than a minor or transitory impact, the activity may proceed forthwith.

ARTICLE 2 INITIAL ENVIRONMENTAL EVALUATION

1. Unless it has been determined that an activity will have less than a minor or transitory impact, or unless a Comprehensive Environmental Evaluation is being prepared in accordance with Article 3, an Initial Environmental Evaluation shall be prepared. It shall contain sufficient detail to assess whether a proposed activity may have more than a minor or transitory impact and shall include:
 - (a) a description of the proposed activity, including its purpose, location, duration, and intensity; and
 - (b) consideration of alternatives to the proposed activity and any impacts that the activity may have, including consideration of cumulative impacts in the light of existing and known planned activities.
2. If an Initial Environmental Evaluation indicates that a proposed activity is likely to have no more than a minor or transitory impact, the activity may proceed, provided that appropriate procedures, which may include monitoring, are put in place to assess and verify the impact of the activity.

ARTICLE 3 COMPREHENSIVE ENVIRONMENTAL EVALUATION

1. If an Initial Environmental Evaluation indicates or if it is otherwise determined that a proposed activity is likely to have more than a minor or transitory impact, a Comprehensive Environmental Evaluation shall be prepared.
2. A Comprehensive Environmental Evaluation shall include:
 - (a) a description of the proposed activity including its purpose, location, duration and intensity, and possible alternatives to the activity, including the alternative of not proceeding, and the consequences of those alternatives;
 - (b) a description of the initial environmental reference state with which predicted changes are to be compared and a prediction of the future environmental reference state in the absence of the proposed activity;
 - (c) a description of the methods and data used to forecast the impacts of the proposed activity;
 - (d) estimation of the nature, extent, duration, and intensity of the likely direct impacts of the

- proposed activity;
- (e) consideration of possible indirect or second order impacts of the proposed activity;
 - (f) consideration of cumulative impacts of the proposed activity in the light of existing activities and other known planned activities;
 - (g) identification of measures, including monitoring programmes, that could be taken to minimise or mitigate impacts of the proposed activity and to detect unforeseen impacts and that could provide early warning of any adverse effects of the activity as well as to deal promptly and effectively with accidents;
 - (h) identification of unavoidable impacts of the proposed activity;
 - (i) consideration of the effects of the proposed activity on the conduct of scientific research and on other existing uses and values;
 - (j) an identification of gaps in knowledge and uncertainties encountered in compiling the information required under this paragraph;
 - (k) a non-technical summary of the information provided under this paragraph; and
 - (l) the name and address of the person or organization which prepared the Comprehensive Environmental Evaluation and the address to which comments thereon should be directed.
3. The draft Comprehensive Environmental Evaluation shall be made publicly available and shall be circulated to all Parties, which shall also make it publicly available, for comment. A period of 90 days shall be allowed for the receipt of comments.
 4. The draft Comprehensive Environmental Evaluation shall be forwarded to the Committee at the same time as it is circulated to the Parties, and at least 120 days before the next Antarctic Treaty Consultative Meeting, for consideration as appropriate.
 5. No final decision shall be taken to proceed with the proposed activity in the Antarctic Treaty area unless there has been an opportunity for consideration of the draft Comprehensive Environmental Evaluation by the Antarctic Treaty Consultative Meeting on the advice of the Committee, provided that no decision to proceed with a proposed activity shall be delayed through the operation of this paragraph for longer than 15 months from the date of circulation of the draft Comprehensive Environmental Evaluation.
 6. A final Comprehensive Environmental Evaluation shall address and shall include or summarise comments received on the draft Comprehensive Environmental Evaluation. The final Comprehensive Environmental Evaluation, notice of any decisions relating thereto, and any evaluation of the significance of the predicted impacts in relation to the advantages of the proposed activity, shall be circulated to all Parties, which shall also make them publicly available, at least 60 days before the commencement of the proposed activity in the Antarctic Treaty area.

ARTICLE 4
DECISIONS TO BE BASED ON COMPREHENSIVE
ENVIRONMENTAL EVALUATIONS

Any decision on whether a proposed activity, to which Article 3 applies, should proceed, and, if so, whether in its original or in a modified form, shall be based on the Comprehensive Environmental Evaluation as well as other relevant considerations.

ARTICLE 5
MONITORING

1. Procedures shall be put in place, including appropriate monitoring of key environmental indicators, to assess and verify the impact of any activity that proceeds following the completion of a Comprehensive Environmental Evaluation.
2. The procedures referred to in paragraph 1 above and in Article 2 (2) shall be designed to provide a regular and verifiable record of the impacts of the activity in order, inter alia, to:
 - (a) enable assessments to be made of the extent to which such impacts are consistent with the Protocol; and
 - (b) provide information useful for minimising or mitigating impacts, and, where appropriate, information on the need for suspension, cancellation or modification of the activity.

ARTICLE 6
CIRCULATION OF INFORMATION

1. The following information shall be circulated to the Parties, forwarded to the Committee and made publicly available:
 - (a) a description of the procedures referred to in Article 1;
 - (b) an annual list of any Initial Environmental Evaluations prepared in accordance with Article 2 and any decisions taken in consequence thereof;
 - (c) significant information obtained, and any action taken in consequence thereof, from procedures put in place in accordance with Articles 2 (2) and 5; and
 - (d) information referred to in Article 3 (6).
2. Any Initial Environmental Evaluation prepared in accordance with Article 2 shall be made available on request.

ARTICLE 7
CASES OF EMERGENCY

1. This Annex shall not apply in cases of emergency relating to the safety of human life or of ships, aircraft or equipment and facilities of high value, or the protection of the environment, which require an activity to be undertaken without completion of the procedures set out in this Annex.

2. Notice of activities undertaken in cases of emergency, which would otherwise have required preparation of a Comprehensive Environmental Evaluation, shall be circulated immediately to all Parties and to the Committee and a full explanation of the activities carried out shall be provided within 90 days of those activities.

ARTICLE 8

AMENDMENT OR MODIFICATION

1. This Annex may be amended or modified by a measure adopted in accordance with Article IX (1) of the Antarctic Treaty. Unless the measure specifies otherwise, the amendment or modification shall be deemed to have been approved, and shall become effective, one year after the close of the Antarctic Treaty Consultative Meeting at which it was adopted, unless one or more of the Antarctic Treaty Consultative Parties notifies the Depositary, within that period, that it wishes an extension of that period or that it is unable to approve the measure.
2. Any amendment or modification of this Annex which becomes effective in accordance with paragraph 1 above shall thereafter become effective as to any other Party.

***Appendix 24: Potential Environmental
Impacts and Proposed Control Measures
Identified by U.S.-Based Nongovernmental
Operators***

Appendix 24
Potential Environmental Impacts and Proposed Control Measures
Identified by U.S.-Based Nongovernmental Operators

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Appendix 24

Potential Environmental Impacts and Proposed Control Measures Identified by U.S.-Based Nongovernmental Operators¹

Table 24.1 Ship-Based Tourism: Ship and Zodiac Operations

Potential Environmental Impacts from Sources/Activities	Proposed Control Measures to Minimize/Avoid Impacts
Potential impacts to water, air and marine fauna/flora from: Fuel and oil-related activities and/or incidents including burning fuel and/or stack emissions and fuel and/or oil spill	<ul style="list-style-type: none"> • Experienced ship/Zodiac operators employed • Staff education and training including mandates and prohibitions of the Antarctic Treaty, the Protocol, Recommendation XVIII-1, and U.S. regulations • Ship operated in accordance with MARPOL, SOLAS, applicable domestic statutes and regulations, and vessel's SOPs • Ship fueled at home port rather than in the Antarctic Treaty Area • Diesel electric vessel propulsion may be used • MARPOL-approved fuels used; high quality, low sulfur fuel • Monitor stacks to ensure particulate emissions minimized • Operate ship at steady speed to minimize load shifts • Ship carries spill retention and absorbent materials • Ship's crew perform fuel, oil and chemical spill response drills • Impacts are no more than minor or transitory from discharge amounts allowable under MARPOL and Annex IV of the Protocol
Potential impacts to water and marine fauna/flora from: Ballast discharge	<ul style="list-style-type: none"> • Discharge in accordance with MARPOL, SOLAS, applicable domestic statutes and regulations, and vessel's SOPs
Potential impacts to water and marine fauna/flora from: Ocean transit, ice breaking, and maneuvering ship/Zodiacs	<ul style="list-style-type: none"> • Ship visits familiar areas making risk of running aground small • Ocean transit and ice breaking impacts are no more than minor or transitory • Ship captain and Zodiac drivers closely monitor weather conditions

¹ These tables are a compilation of various control measures identified by the various U.S.-based operators.

<p>Potential impacts to water, air and marine fauna/flora from:</p> <p>Waste-related activities/incidents including: discharges of sewage water to Antarctic Treaty waters, stack emissions from incineration of dry garbage, and accidental waste/litter releases. Wastes include: sewage water, food waste, medical waste, batteries, and any other garbage</p>	<ul style="list-style-type: none"> • MARPOL and Annexes III and IV of the Protocol apply
	<ul style="list-style-type: none"> • Sewage waste macerated and disposed of north of 60°S through a screen with openings no greater than 25 millimeters
	<ul style="list-style-type: none"> • Dry garbage incinerated daily with fuel and stack emissions monitoring; all other wastes and garbage, including batteries, compacted and stored for later shoreside disposal outside the Treaty Area
	<ul style="list-style-type: none"> • Educate passengers on need to control litter to prevent releases
	<ul style="list-style-type: none"> • Accidental releases cleaned up as possible; natural dispersion by wind/wave action
<p>Potential impacts to marine fauna from:</p> <p>Vessel noise and lights</p>	<ul style="list-style-type: none"> • Slow ship or Zodiac or shut down engines when in the presence of marine mammals
	<ul style="list-style-type: none"> • Keep ship speed no faster than required for safe navigation, run at reasonably constant RPM and propeller pitch settings; use diesel electric propulsion, resilient or floating engine mounts, isolate pipe mounts
	<ul style="list-style-type: none"> • Light impacts are no more than minor or transitory
<p>Potential impacts to marine fauna/flora and science program research from:</p> <p>Anchoring</p>	<ul style="list-style-type: none"> • Avoid protected areas
	<ul style="list-style-type: none"> • Experienced crew and use of available maps
<p>Potential impacts to water, air, marine fauna/flora and science program research from:</p> <p>Inadvertently entering protected areas</p>	<ul style="list-style-type: none"> • Experienced crew and use of available information on protected areas including maps
	<ul style="list-style-type: none"> • Avoid protected areas
	<ul style="list-style-type: none"> • No anchoring inside marine protected areas
<p>Potential impacts to water, air, marine fauna/flora and near shore habitats from:</p> <p>Zodiac operations including: fueling, waste disposal, marine incidents, and point source pollution</p>	<ul style="list-style-type: none"> • No refueling or fuel discharges while at sea
	<ul style="list-style-type: none"> • Any refuse or waste generated during Zodiac activities returned to the ship for disposal

Table 24.2 Ship-Based Tourism: Landing Operations Including Helicopter Overflights/Landings

Potential Environmental Impacts from Sources/Activities	Proposed Control Measures to Minimize/Avoid Impacts
<p>Potential impacts of human activity on fauna/flora from:</p> <p>Trampling nesting sites and fragile plant communities; noise; predation and scavenging of eggs and chicks if adults are forced to leave their nests or young unattended</p>	<ul style="list-style-type: none"> • Staff education/training and passenger education including mandates and prohibitions of the Antarctic Treaty, the Protocol, Recommendation XVIII-1, and U.S. regulations; passenger education includes pre-departure materials, and onboard briefings and videos • Passengers on shore not allowed to fish, hunt, or engage in other sporting activities that are prohibited or which may adversely affect wildlife or the environment • Number of passengers ashore at any one time limited to 100 • Passengers closely supervised by staff with staff to passenger ratio of 1:15-20 • Passengers spend a relatively short amount of time ashore at each landing site with off-limits areas defined by staff • Ship's captain revoking future landing privilege for a passenger's flagrant violation of the landing procedures
<p>Potential impacts of human activity on fauna from:</p> <p>Introduction of alien species or microbes; spread of disease from other colonies</p>	<ul style="list-style-type: none"> • Boot washing stations standard on tour vessels for visitors to clean their boots before and after each landing • Careful checking of clothing • Avoid direct contribution to the spread of the IBDV virus by not taking any poultry products or vegetation ashore for any reason • Helicopter skids cleaned between landings
<p>Potential impacts of human activity on water, air, fauna/flora, aesthetics, and science program research from:</p> <p>Harm to protected areas and destruction of the aesthetic value and general well-being of the Antarctic environment</p>	<ul style="list-style-type: none"> • Expedition leader verifies that no protected areas are in the vicinity of the proposed landing site • No protected sites are visited and a minimum distance of 100 meters from protected areas is maintained • Staff reconnaissance of site following passenger landings to ensure no trash or other items left behind
<p>Potential impacts of human activity on water, air, fauna/flora and science program research from:</p> <p>Harm to new sites</p>	<ul style="list-style-type: none"> • Visits managed and evaluated according to established factors: <ul style="list-style-type: none"> • whether or not the site is in close proximity to a protected area • species diversity at the site • the amount of space available for visitors to walk freely • whether or not the site features nesting southern giant petrels or other flying birds • Site visit report with sketch map and preliminary survey of existing environment prepared • Post-trip report completed and filed with IAATO and appropriate national authority

Potential impacts of human activity on historic buildings and artifacts including taking biological and historic mementos as souvenirs	• Degradation avoided by enforcing strict guidelines established prior to departure from the vessel
	• Passenger education
	• Close passenger supervision while in historic buildings and around artifacts
Potential impacts of human activity on science program research and operations	• Science station visits coordinated w/National Science Foundation and other appropriate national programs
	• No entry into SSSIs
Potential impacts of helicopter flight activity on fauna/flora from: Fuel spill during refueling, dust creation and surface destruction from rotor down draught, increased predation following disturbance by aircraft/aircraft noise	• Fueling onboard ship only with spill/clean up provisions in-place
	• No flights directly over Emperor Rookeries or below 500 meters and only land a minimum of 1 km from the rookeries
	• Land on ice and snow when possible to minimize soil impacts
	• No helicopter landings near fresh water lakes (e.g., Dry Valleys or Zhongshan Station areas)
	• Land in areas designated by national program authorities deemed "tourist" landing sites to avoid interference with ongoing science activities
	• Wastes managed in accordance with U.S. Antarctic Conservation Act Permit
	• Comply with company's guidelines and SOP for helicopter operations

Table 24.3 Nongovernmental Scientific Expeditions: Land-based Research Activities Supported by Ship Transport and Helicopter Overflights

Potential Environmental Impacts from Sources/Activities	Proposed Control Measures to Minimize/Avoid Impacts
Potential impacts to water, air and marine fauna/flora from ship-based transport platform: See Table 24.1 above, 'Ship-Based Tourism: Ship and Zodiac Operations'	• Researchers rely on tour ships and national program vessels for ship transportation; see Table 24.1 above, 'Ship-Based Tourism: Ship and Zodiac Operations'

Potential impacts of researchers on fauna including 'taking' ² or 'harmful interference' ³	• Education and training of research personnel including mandates and prohibitions of the Antarctic Treaty, the Protocol, Recommendation XVIII-1, and U.S. regulations
	• Awareness of site-specific sensitivities
	• Actual on-site conduct including paying close attention to wildlife and maintaining a safe distance that does not cause the animals to alter their behavior in any fashion
	• Identification activities done via photography to minimize/avoid contact with fauna
	• Work around fauna conducted in accordance with U.S. Antarctic Conservation Act Permit
Potential impacts of researchers on flora including 'taking' ⁴ or 'harmful interference' ⁵	• Education and training of research personnel including mandates and prohibitions of the Antarctic Treaty, the Protocol, Recommendation XVIII-1, and U.S. regulations
	• Awareness of site-specific sensitivities
	• Actual on-site conduct including paying close attention to areas where standing, walking and hiking to avoid trampling or walking on flora
	• Identification activities done via photography to minimize/avoid contact with flora
	• Work around flora conducted in accordance with U.S. Antarctic Conservation Act Permit
Potential impacts of helicopter flight activity on fauna/flora from helicopter transport platform	• Researchers rely on national program helicopter aboard the <i>HMS Endurance</i> for overflight transportation which complies with the guidelines established by the UK Foreign and Commonwealth Office to avoid harmful interference with concentrations of Antarctic wildlife

² The term 'take' means to kill, injure, capture, handle, or molest a native mammal or bird, or to remove or damage such quantities of native plants that their local distribution or abundance would be significantly affected. From: P.L. 104-227, Title I, Sec. 3, Definitions.

³ The term 'harmful interference' means – (A) flying or landing helicopters or other aircraft in a manner that disturbs concentrations of birds or seals; (B) using vehicles or vessels, including hovercraft and small boats, in a manner that disturbs concentrations of birds or seals; (C) using explosives or firearms in a manner that disturbs concentrations of birds or seals; (D) willfully disturbing breeding or molting birds or concentrations of birds or seals by persons on foot; (E) significantly damaging concentrations of native terrestrial plants by landing aircraft, driving vehicles, or walking on them, or by other means; and (F) any activity that results in the significant adverse modification of habitats of any species or population of native mammal, native bird, native plant, or native invertebrate. From: P.L. 104-227, Title I, Sec. 3, Definitions.

⁴ See Footnote 2.

⁵ See Footnote 3.

*Appendix 25: Assessment of the Possible
Cumulative Environmental Impacts of
Commercial Ship-Based Tourism in the
Antarctic Peninsula Area*

Appendix 25
Assessment of the Possible Cumulative Environmental Impacts
of Commercial Ship-Based Tourism in the Antarctic Peninsula Area

Preliminary Summary of Proceedings of a Workshop
Sponsored by EPA, National Science Foundation, and IAATO
June 7-9, 2000¹

The issue of cumulative impacts, particularly in the Peninsula area, remains a concern in light of such factors as the increasing number of tour operators, expeditions, and passengers landed; the number of sites visited; and the frequency at which certain sites are visited. To better address the issue of possible cumulative environmental impacts associated with ship-based Antarctic tourism, the EPA, the National Science Foundation and IAATO sponsored a workshop for scientists and government, industry and environmental interest group representatives to consider the research needed to assess whether any changes in the fauna and flora are related to natural variation or to tourism activities.

It is unlikely that any single landing by tourists to particular sites, including sites in the Peninsula area, will have significant environmental effects if carried out in accordance with the applicable provisions of the Protocol, Recommendation XVIII-1, and the general reporting guidelines for tourism and nongovernmental activities. However, it is possible that multiple visits to some areas, during the same year or over a series of years, could have cumulative adverse impacts even if the visits are carried out in accordance with the provisions of the Protocol and applicable guidelines.

Various information gathering efforts and research activities have been and are being done to provide the kinds of information necessary to assess and determine how best to prevent or mitigate the possible cumulative effects of tourist activities, particularly in the Peninsula area. However, information currently available is insufficient to accurately predict how or to what extent the physical features and biota at particular sites may be affected by repeated visits. Similarly, available information is insufficient to accurately predict the frequency and duration of visits likely to produce particular effects (i.e., to predict likely cause-effect relationships) particularly in light of the need to, and difficulty of, separating natural variability from anthropogenic impacts. Available information is also insufficient to determine how best to avoid or mitigate possible cumulative adverse impacts and whether effects are related linearly to the level of activity or occur only when disturbance reaches some threshold level. Thus, the principal objectives of the workshop were to:

1. Identify, based upon available information and experience elsewhere, the types of cumulative environmental impacts that possibly could result from commercial, ship-based tourist operations in the Antarctic Peninsula area;
2. Review on-going research and monitoring programs in the Peninsula area to determine whether they likely will be able to detect the possible cumulative adverse effects of ship-based tourism before they reach significant levels (i.e., levels that would not be considered minor or transitory under the Protocol); and

¹ "Assessment of the Possible Cumulative Environmental Impacts of Commercial Ship-Based Tourism in the Antarctic Peninsula Area: Proceedings of a Workshop Held in La Jolla, California, 7-9 June 2000." Draft Report. Workshop sponsors: National Science Foundation, EPA, and IAATO. Undated.

3. Describe changes in existing research and monitoring programs or additional programs that would be required to detect cumulative adverse effects before they reach significant levels.

The attached table is a preliminary summary of various elements identified and discussed during the workshop including examples of: possible cumulative impacts, site variables affecting possible cumulative effects, activity variables possibly affecting cumulative impacts, and impact avoidance/mitigation measures.

With regard to assessing the practicality of possible management measures, workshop participants recognized that all possible measures for assessing and avoiding or minimizing the cumulative effects of ship-based tourism may not be practical to implement (e.g., monitoring every site that might be subject to visitation would be cost prohibitive). Variables that may need to be considered include: (1) the likely acceptance of the measure(s) by the Antarctic Treaty Consultative Parties, by IAATO members, and by tour operators not members of IAATO; (2) the ease and economic consequences of implementation; (3) possible alternative measures; (4) the actual and perceived effectiveness of existing measures; (5) the uniqueness or novelty of the site to which the measure(s) will apply; (6) the evidence indicating that a cumulative impact is occurring or likely to occur and that the contemplated measure(s) will prevent, minimize, or mitigate the impact; and (7) the presence of a comparable, similarly accessible site or sites near the site that the management measure(s) would affect.

Four long-term research and monitoring programs being conducted in the Peninsula area that are compiling information potentially useful for detecting the possible cumulative environmental effects of tourism and other activities in the area were reported on at the workshop. These programs include:

- (1) ☐ Antarctic Site Inventory being carried out by Oceanites, a U.S.-based nongovernmental research organization for the purpose of:
 - determining whether opportunistic visits can be used to effectively and economically detect possible changes in the physical features, flora, and fauna of sites in the Antarctic Peninsula being visited repeatedly by ship-borne tourists; and
 - compiling baseline data and activity information necessary to detect and determine the possible causes of changes in the physical or biological features of the sites.
- (2) Antarctic Marine Living Resources (AMLR) Research Program being carried out by the Southwest Fisheries Science Center of the U.S. National Marine Fisheries Service for the purpose of:
 - conducting ship-board studies to document and monitor changes and trends in krill distribution, abundance, age structure, and related oceanographic conditions in the area around the South Shetland Islands, particularly the waters around Elephant, King George, and Livingston Islands;
 - conducting trawl surveys to document and monitor the distribution, abundance, and trends of bottom fish in the waters around the South Shetland and South Orkney Islands;
 - compiling and assessing catch and related data concerning crab and any other fisheries conducted in the CCAMLR Area by vessels under U.S. jurisdiction; and
 - conducting land-based studies of penguins and seals that could be affected indirectly to krill harvesting in the area around the South Shetland Islands. Additional land-based studies of penguins are carried out cooperatively with National Science Foundation grantees on Torgersen Island adjacent to Palmer Station on Anvers Island, and at Admiralty Bay on King George Island.
- (3) Palmer Station Long-Term Ecological Research (LTER) Program being supported by the

National Science Foundation.

- The central tenet of the program is that the annual advance and retreat of sea ice is a major determinant of temporal and spatial variability in the structure and function of the Antarctic marine ecosystem, from total annual primary production to breeding success in sea birds.
- Research includes: documenting the interannual variability of annual sea ice and the corresponding variability in nutrient availability and in primary and secondary productivity; monitoring the distribution, abundance, and recruitment of krill and the breeding success and survival of sea birds in the study area; and construction and validation of models that relate ecosystem processes to environmental variability.

- (4) Penguin Studies at Torgersen Island, near Palmer Station, and at King George Island being supported by the National Science Foundation and the National Marine Fisheries Service (see item 2, above).

Among other things, these study results indicate that long-term observations will be necessary to detect any possible cumulative impacts of ship-based tourism.

The conclusions of the workshop will be presented in the final report of the workshop.

Preliminary Summary of Workshop Elements	
Examples of Site Variables Affecting Possible Cumulative Effects:	• Biological diversity at the site
	• Location relative to the distributional ranges of the species present
	• Robustness of the species present
	• Availability of open space
	• General topography
	• Novelty of the site
	• Ice and weather conditions
	• Availability of safe anchoring or holding sites
	• Acoustic characteristics
	• Location of comparable sites nearby
Examples of Activity Variables Possibly Affecting Cumulative Impacts:	• Timing of visits relative to the life cycles or breeding chronologies of species present at sites
	• Number, frequency and length of visits to sites
	• Number of visitors ashore at any one time, how long they are at the site, where they go and what they do while ashore, and how well briefed they are before landing and obey the landing 'rules' for particular sites

Examples of Impact Avoidance/Mitigation Measures:	• Limit the number of visits and visitors to particular sites
	• Maximize, minimize, or alternate the number of sites visited
	• Categorize and develop site-specific management plans for different types of sites
	• Establish universal qualification standards for ship operations and manning
	• Design and conduct comparative studies and perturbation experiments
	• Site modification (e.g., marking walking paths)
	• Encourage self-regulation and self-policing
	• Establish guidelines or codes of conduct for additional activities
	• Periodic review and revision of applicable guidelines

*Appendix 26: Summary of Conventions,
the Protocol, and MARPOL 73/78 as
Applicable to Nongovernmental Activities
in Antarctica*

Appendix 26

Summary of Conventions, the Protocol, and MARPOL 73/78 As Applicable to Nongovernmental Activities in Antarctica

Convention for the Conservation of Antarctic Seals (CCAS)¹

Concluded: 1972

Entered into Force: 1978

Objective: Establishes limitations upon, and provides a mechanism to deal with, commercial sealing in Antarctica.

Background and Description: CCAS was negotiated primarily as a precautionary measure in light of concern over the possible re-initiation of pelagic commercial sealing in Antarctica. Interest in such sealing has not materialized as was confirmed at the meeting of Parties to CCAS in September 1988.

Convention on the Conservation of Antarctic Marine Living Resources (CCAMLR)²

Concluded: 1980

Entered into Force: 1982

Objective: CCAMLR is intended to ensure that any harvesting of Antarctic marine living resources is consistent not only with the health of target populations, but also with that of dependent and related species and with maintenance of ecological relationships.

Background and Description: CCAMLR resulted from a 1977 ATCM initiative and represents a precedent-setting effort to develop and apply an ecosystem-wide management approach to the waters surrounding Antarctica. Consistent with its conservation objectives, the CCAMLR applies to a geographic area defined to approximate the full extent of the Antarctic marine ecosystem. This area, defined by specific coordinates, extends to those waters found south of the Antarctic Convergence which is the transition zone between Antarctic waters to the south and warmer sub-Antarctic waters to the north. Note that the CCAMLR area is considerably larger than the Antarctic Treaty area (which applies to the area south of 60° south latitude).

CCAMLR establishes the Commission for the Conservation of Antarctic Marine Living Resources; the Scientific Committee for the Conservation of Antarctic Marine Living Resources, charged with providing objective scientific assessments and recommendations to the Commission; and a Secretariat to serve both the Commission and Scientific Committee. CCAMLR provides that the Commission will operate on the basis of consensus, or no-objection, procedure characteristic of the ATS.

The Protocol on Environmental Protection to the Antarctic Treaty (Protocol)³

Concluded: 1991

Entered into Force: 1998

¹ "Antarctica." U.S. Department of State. H. Cohen, ed. September 8, 1999.

² "Antarctica." U.S. Department of State. H. Cohen, ed. September 8, 1999.

³ "Antarctica." U.S. Department of State. H. Cohen, ed. September 8, 1999.

Objective: Extends and improves the Treaty's effectiveness as a mechanism for ensuring the protection of the Antarctic environment.

Background and Description: The Protocol designates Antarctica as a natural reserve, devoted to peace and science, and sets forth basic principles and detailed requirements applicable to human activities in Antarctica, including obligations to accord priority to scientific research. The Protocol:

- Prohibits all activities related to Antarctic mineral resources, except for scientific research; this prohibition cannot be amended by less than unanimous agreement for at least 50 years following entry into force of the Protocol.
- Requires Parties to protect Antarctic fauna and flora.
- Imposes strict limitations on disposal of wastes in Antarctica and discharge of pollutants into Antarctic waters.
- Requires Parties to provide for response to environmental emergencies, including through the development of joint contingency plans.
- Requires application of environmental impact assessment procedures to activities undertaken in Antarctica, including nongovernmental activities, for which advance notice is required under the Antarctic Treaty.

Detailed mandatory rules for environmental protection pursuant to these requirements are incorporated in a system of annexes to the Protocol:

- Annex I Environmental Impact Assessment
- Annex II Conservation of Antarctic Fauna and Flora
- Annex III Waste Disposal and Waste Management
- Annex IV Prevention of Marine Pollution⁴
- Annex V Area Protection and Management

Annexes I-IV were adopted in 1998 with the Protocol; Annex V has not yet entered into force. The Protocol also provides for additional annexes to be incorporated. The Protocol includes procedures for settling disputes over the interpretation or application of the provisions of the Protocol relating to mineral resource activities, environmental impact assessment and response actions.

The Protocol establishes a Committee for Environmental Protection (CEP), as an expert advisory body to provide advice and formulate recommendations to the ATCMs in connection with the implementation of the Protocol; the CEP was chartered in 1998.

International Convention for the Prevention of Pollution from Ships (MARPOL 73/78)^{5 6}

International Agreement Adopted: 1973

MARPOL Protocol Adopted: 1978

Objective: MARPOL (1973) and its Protocol (1978) address prevention of pollution from ships

⁴ Annex IV of the Protocol contains rules to control marine pollution from ships operating in the Antarctic Treaty Area and closely follows the MARPOL 73/78 provisions.

⁵ "Antarctica." U.S. Department of State. H. Cohen, ed. September 8, 1999.

⁶ "Guidelines for Antarctic Shipping and Related Activities." Working Paper Submitted by the United Kingdom for 'Antarctica: Meeting of Experts on Guidelines for Antarctic Shipping.' April 11, 2000.

operating on the high seas including the waters of Antarctica.

Background and Description: MARPOL 73/78, as it is commonly known, includes six annexes:

Annex I	Regulations for the Prevention of Pollution by Oil ⁷
Annex II	Regulations for the Control of Pollution by Noxious Liquid Substances in Bulk
Annex III	Regulations for the Prevention of Pollution by Harmful Substances Carried by Sea in Package Form ⁸
Annex IV	Regulations for the Prevention of Pollution by Sewage from Ships ⁹
Annex V	Regulations for the Prevention of Pollution by Garbage from Ships ¹⁰
Annex VI	Regulations for the Prevention of Air Pollution from Ships ¹¹

Currently, Annexes I, II, III and V are in force; Annexes IV and VI are not. The International Maritime Organization (IMO) has designated the Antarctic Treaty Area (sea area south of 60° south latitude) as a Special Area under Annexes I, II and V. This designation prohibits the discharge into the sea of oil and oily waste (except in cases permitted by Annex I), noxious liquid substances carried in bulk, all plastics and other garbage. The provisions require that oil and oily wastes, all plastics and all other garbage should be discharged at port reception facilities outside of the Antarctic Treaty Area.

⁷ Annex I requires ships to carry a shipboard oil pollution emergency plan. All vessels operating in the Antarctic Treaty Area should have the capability to contain and clean up onboard spills. An oil record book must be maintained onboard and completed each time oil or oily mixtures are discharged, or in the event of an oil spill.

⁸ Vessels cannot dispose of hazardous or polluting chemicals or substances (e.g., battery acid, antifreeze) into the sea in the Treaty Area in quantities or concentrations that are harmful to the marine environment.

⁹ Discharge of untreated sewage within 12 miles of shore is prohibited.

¹⁰ Annex V requires ships (400 grt or above) to carry a garbage management plan and a garbage record book. The management plan sets out written procedures for collecting, storing, processing and disposing of garbage; the record book is completed each time garbage is discharged or incinerated, or in the event of any accidental loss of garbage. Food waste may be discharged into the sea in the Treaty Area if it has been passed through a comminuter to a size less than 25 mm and is discharged not less than 12 miles from shore.

¹¹ Onboard incineration of ship-generated waste is permitted in the Treaty Area.

*Appendix 27: U.S. Domestic Statutes and
Regulations Implementing the Antarctic
Treaty System Conventions and the Protocol
Applicable to Nongovernmental Activities in
Antarctica*

Appendix 27

U.S. Domestic Statutes and Regulations Implementing the Antarctic Treaty System Conventions and the Protocol Applicable to Nongovernmental Activities in Antarctica

Marine Mammal Protection Act of 1972, Public Law 92-522, 16 U.S.C. 1371 et seq.

Implements: Convention for the Conservation of Antarctic Seals (CCAS)

Responsible Agency: National Marine Fisheries Service, within the National Oceanic and Atmospheric Administration (NOAA)

Description: Subject to certain exceptions, the Marine Mammal Protection Act (MMPA) established a moratorium on the taking of marine mammals in U.S. waters and by U.S. citizens on the high seas. Taking is defined to include intentional and unintentional harassment, as well as hunting, capturing, and killing any marine mammal (including seals). The MMPA includes, amongst other things, provisions authorizing the taking of marine mammals incidental to commercial fisheries.

Marine Mammal Protection Act (MMPA) of 1972, Public Law 92-522, 16 U.S.C. 1371 et seq.; and Antarctic Marine Living Resources Conservation Act (AMLRCA) of 1984, 16 U.S.C.A. 2431-2444.

Implements: Convention on the Conservation of Antarctic Marine Living Resources (CCAMLR)

Responsible Agency: Various including: Departments of Commerce, the Interior, and State; National Marine Fisheries Service, within the National Oceanic and Atmospheric Administration (NOAA); Marine Mammal Commission; National Science Foundation. Enforcement of AMLRCA is mandated to the U.S. Coast Guard, or any other U.S. department or agency.

Description: Relative to Antarctica, the MMPA: (1) directs actions to be taken as appropriate or necessary to protect and conserve marine mammals under existing international agreements; (2) provides for the Marine Mammal Commission to make recommendations to other agencies on actions needed to conserve marine mammals which may include marine mammals listed as endangered or threatened under the Endangered Species Act or depleted under the MMPA, as well as other species or populations facing special conservation challenges; and (3) directs the National Science Foundation to continue to support basic marine research in the Antarctic. The National Marine Fisheries Service regulations govern commercial fishing in Antarctic waters and apply to all marine biota, including bird and mammal populations.¹

AMLACA prohibits any person under the jurisdiction of the U.S. from engaging in harvesting activities that violate CCAMLR or its associated conservation measures. AMLRCA gives the U.S. authority to enforce CCAMLR's conservation standards on its nationals and vessels on the high seas within the area south of the Antarctic Convergence.

¹ These regulations include provision for environmental impact assessment of permitted activities; thus, to avoid duplication, EPA's Interim Final Rule at 40 CFR Part 8 does not include environmental documentation for commercial fisheries conducted under a permit issued by the National Marine Fisheries Service.

The Antarctic Conservation Act of 1978 (ACA), Public Law 95-541, as amended, 16 U.S.C. 2401 et seq.

Implements: Protocol on Environmental Protection to the Antarctic Treaty²

Responsible Agency: National Science Foundation

Description:³ The ACA conserves and protects the native mammals, birds, and plants of Antarctica and the ecosystems of which they are a part. The law applies to: U.S. citizens in Antarctica; certain persons in Antarctica who participate in U.S. government activities; U.S. corporations or other legal entities that organize expeditions into the Antarctic; and U.S. persons wherever located, or foreign persons while in the United States, who handle certain Antarctic animals and plants.⁴

The ACA applies to land and fast ice south of 60 degrees south latitude. A permit system authorized by the ACA allows certain activities, otherwise prohibited, when performed within prescribed restrictions for scientific or other worthwhile purposes. Under the National Science Foundation regulations, it is unlawful, unless authorized by permit, to:⁵

1. Take native mammals or birds;
2. Engage in harmful interference;
3. Enter specially designated areas;
4. Introduce non-indigenous species to Antarctica;
5. Use or discharge designated pollutants;

² Originally implemented the Agreed Measures for the Conservation of Antarctic Fauna and Flora which have since been superseded by the Protocol on Environmental Protection.

³ "Antarctic Conservation Act of 1978 (Public Law 95-541) with Regulations, Descriptions and Maps of Special Areas, Permit Application Form, Agreed Measures for the Conservation of Antarctic Fauna and Flora (1964), and Protocol on Environmental Protection (1991)," National Science Foundation, Arlington, VA 22230, October 1995.

⁴ The Antarctic Science, Tourism, and Conservation Act of 1996 amends the Antarctic Conservation Act to include the following definition of the term 'harmful interference:'
(A) flying or landing helicopters or other aircraft in a manner that disrupts concentrations of birds or seals;
(B) using vehicles or vessels, including hovercraft and small boats, in a manner that disturbs concentrations of birds or seals;
(C) using explosives or firearms in a manner that disturbs concentrations of birds or seals;
(D) willfully disturbing breeding or molting birds or concentrations of birds or seals by persons on foot;
(E) significantly damaging concentrations of native terrestrial plants by landing aircraft, driving vehicles, or walking on them, or by other means; and
(F) any activity that results in the significant adverse modification of habitats of any species or population of native mammal, native bird, native plant, or native invertebrate.

The term 'take' means to kill, injure, capture, handle, or molest a native mammal or bird, or to remove or damage such quantities of native plants that their local distribution or abundance would be significantly affected.

Further, certain acts are specifically prohibited unless authorized by permit.

⁵ The National Science Foundation, the agency of the U.S. Government that funds and manages the U.S. Antarctic Program (USAP), administers most provisions of the ACA including its permit system.

6. Discharge wastes; and
7. Import certain Antarctic items into the United States.

Certain National Science Foundation employees in Antarctica are designated enforcement officers. These Federal officials are responsible for ensuring compliance with the ACA, implementing regulations and permits. The ACA provides penalties of up to \$25,000 and 1 year imprisonment for violations.

The Antarctic Science, Tourism, and Conservation Act of 1996, Public Law 104-227, amends the Antarctic Conservation Act of 1978

Implements: Protocol on Environmental Protection to the Antarctic Treaty

Responsible Agencies: National Science Foundation, U.S. Environmental Protection Agency, and the U.S. Coast Guard

Description:

A. Environmental Impact Assessment of Nongovernmental Activities: The EPA has regulations that require environmental impact assessment of nongovernmental activities, including tourism, for which the United States is required to give advance notice under Paragraph 5 of Article VII of the Treaty; and coordination of the review of information regarding environmental impact assessment received from other Parties under the Protocol.⁶

B. Environmental Protection Information: The National Science Foundation has proposed regulations requiring that any person organizing a nongovernmental expedition to or within Antarctica and who does business in the United States must notify expedition member of the environmental protection obligations of the ACA.⁷

C. Emergency Response Plans: The National Science Foundation has proposed regulations requiring any person organizing an expedition to or within Antarctica who is transporting passengers aboard a non-U.S. flagged vessel to ensure that the vessel owner or operator has a shipboard oil pollution emergency plan, and that the vessel owner or operator agrees to take all reasonable measures to implement the plan in the event of an emergency.⁸

D. Controlling Pollution from U.S. Vessels: The Act upgrades and reinforces U.S. regulations controlling pollution activities.⁹

Act to Prevent Pollution from Ships (APPS), Public Law 96-478, 33 U.S.C. 1901 et seq.

⁶ Interim Final Rule, 40 CFR Part 8, Environmental Impact Assessment of Nongovernmental Activities in Antarctica.

⁷ *Federal Register*/Vol. 63, No. 107/Thursday, June 4, 1998/Proposed Rules.

⁸ *Federal Register*/Vol. 63, No. 107/Thursday, June 4, 1998/Proposed Rules.

⁹ Joyner, Christopher C. "United States Legislation and the Polar Oceans." *Ocean Development & International Law*, 29:265-290, 1998.

Implements: International Convention for the Prevention of Pollution from Ships (MARPOL 73/78)

Responsible Agency: U.S. Coast Guard

Description: U.S. vessels are prohibited from: discharging oil or oily mixtures except as permitted under MARPOL 73/78; disposing of plastics, garbage as specifically defined within the Antarctic Treaty area; and must have sufficient capacity onboard to retain garbage within the Antarctic Treaty area and to have adequate facilities for reception of all sludge, dirty ballast, tank-washing water, oily residues, and garbage.¹⁰

¹⁰ Joyner, Christopher C. "United States Legislation and the Polar Oceans." *Ocean Development & International Law*, 29:265-290, 1998